## Claims

1. A method for monitoring the presence of selected chromophores in a sample of epithelial tissue, independent of the amount of a predetermined chromophore, the method comprising:
illuminating an area of tissue by projecting light from a light source of at least two different wavelengths $\lambda_1$, $\lambda_2$ ;
receiving light remitted by the illuminated area of tissue at a photoreceptor;
analysing the received light to obtain a measurement $R_t(\lambda)$ for each wavelength and then calculating :

$Z = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^l}$ where l is chosen such that Z is independent of the amount of predetermined chromophore.

2. A method according to claim 1, in which $R_t(\lambda)$ is calculated by analysing the received light to identify and measure the proportion of light of each wavelength remitted from the tissue $I_r(\lambda)$; and calculating the ratio of light at each wavelength returned from the tissue $R_t(\lambda)$.

3. A method according to claim 1 or 2,in which l is calculated such that $Z = \frac{R_d(c,h,\lambda_1)^j}{R_d(c,h,\lambda_2)^{jk}} = \frac{R_t(\lambda_1)^j}{R_t(\lambda_2)^{jk}} = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^l}$ where j and k are such that $2j\alpha(\lambda_1) = 2kj\alpha(\lambda_2) = 1$ where $\alpha(\lambda_1)$ and $\alpha(\lambda_2)$ are the absorbtion coefficients for the predetermined chromophore at each wavelength.

4. A method according to any one of the preceding claims, in which the predetermined chromophore is melanin.

5. A method according to any one of claims 1 to 4, in which the predetermined chromophore is haemoglobin.

6. A method according to any one of the preceding claims, in which the epithelial tissue is skin.

7. A method according to any one of the preceding claims, in which the wavelengths $\lambda_1$, $\lambda_2$ are chosen such that a change in collagen level causes a relatively small change in the absorbtion of $\lambda_1$ , and a relatively large change in the absorbtion of $\lambda_2$.

8. A method according to claim 7, in which the difference between the two wavelengths $\lambda_1$, $\lambda_2$ is at least 200 nm.

9. A method according to claim 8, in which the wavelengths are substantially 700 nm and 940nm respectively.

10. A method of forming an image of an area of epithelial tissue independent of the amount of a predetermined chromophore in the tissue, locations, formed by obtaining Z for a plurality of locations within the area , Z being obtained by illuminating an area of tissue by projecting light from a light source of at least two different wavelengths $\lambda_1$, $\lambda_2$ ;

receiving light remitted by the illuminated area of tissue at a photoreceptor;

analysing the received light to analysing the received light to obtain a measurement $R_t(\lambda)$ for each wavelength

and then calculating :

$$Z = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^\iota}$$ where $\iota$ is chosen such that Z is independent of the amount of predetermined chromophore;

and mapping the amounts Z at positions indicative of the location within the area of the measurement.

11. A method according to claim 10, in which $R_t(\lambda)$ is calculated by analysing the received light to identify and measure the proportion of light of each wavelength remitted from the tissue $I_r(\lambda)$; and calculating the ratio of light at each wavelength returned from the tissue $R_t(\lambda)$.

12. A method according to claim 10 or 11, in which l is calculated such that $Z = \frac{R_d(c,h,\lambda_1)^j}{R_d(c,h,\lambda_2)^{jk}} = \frac{R_t(\lambda_1)^j}{R_t(\lambda_2)^{jk}} = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^l}$ where j and k are such that $2j\alpha(\lambda_1) = 2kj\alpha(\lambda_2) = 1$ where $\alpha(\lambda_1)$ and $\alpha(\lambda_2)$ are the absorbtion coefficients for the predetermined chromophore at each wavelength.

13. A method according to any one of the preceding claims, in which the at least two sets of calculations

$Z = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^l}$ are carried out, a first calculation with $l_1$ such that Z is independent of the amount of a first predetermined chromophore, and a second calculation with $l_2$ such that Z is independent of the amount of a second predetermined chromophore.

14. A method according to any one of the preceding claims in which the light source used to illuminate the tissue, is of at least three wavelengths, $\lambda_1$, $\lambda_2$, $\lambda_3$, and at least three pairs of calculations of Z are made, namely

$Z = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^{l1}}, Z = \frac{R_t(\lambda_2)}{R_t(\lambda_3)^{l2}}, Z = \frac{R_t(\lambda_1)}{R_t(\lambda_3)^{l3}}$, where $l_1$ $l_2$ $l_3$ are each chosen such that Z is independent of the amount of the predetermined chromophore for the respective pair of wavelengths.

15. Apparatus for monitoring the presence of selected chromophores in a sample of epithelial tissue, independent of the amount of a predetermined chromophore

comprising a light source for illuminating tissue with light of at least two different wavelengths $\lambda_1$, $\lambda_2$;

a photoreceptor for receiving images remitted by the illuminated area of tissue at a photoreceptor; and

microprocessor means for analysing the received light to identify and measure the proportion of light of each wavelength remitted from the tissue $I_r(\lambda)$; calculating the ratio of light at each wavelength returned from the tissue $R_t(\lambda)$, and then calculating :

$Z = \frac{R_t(\lambda_1)}{R_t(\lambda_2)^l}$ where 1 is chosen such that Z is independent of the amount of predetermined chromophore.

16. Apparatus according to claim 15, also comprising image creation means for receiving a plurality of values of Z, each for a specified location on the tissue, and providing a mapped image representing the value of Z at the plurality of locations on the tissue.